

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :

G01N 21/00

A1

(11) International Publication Number:

WO 00/66999

(43) International Publication Date:

9 November 2000 (09.11.00)

(21) International Application Number: PCT/US00/12335

(22) International Filing Date: 4 May 2000 (04.05.00)

(30) Priority Data:
60/132,648 5 May 1999 (05.05.99) US

(71) Applicant (for all designated States except US): LUCIDYNE TECHNOLOGIES, INC. [US/US]; 155 SW Madison Avenue, Corvallis, OR 97333 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): CARMAN, George, M. [US/US]; 2961 NW Jackson Avenue, Corvallis, OR 97330 (US). FREEMAN, Patrick, S. [US/US]; 35033 Northernwood Drive, Brownsville, OR 97327 (US).

(74) Agent: LEVINE, Michael, L.; Stoel Rives L.L.P., Suite 2600, 900 SW Fifth Avenue, Portland, OR 97204-1268 (US).

(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: FIBER-OPTIC LIGHT LINE FOR USE IN AN INSPECTION SYSTEM

(57) Abstract

The present invention employs a blinded fiber-optic light illumination system (12) to illuminate a wood board (24) with a sharp projected light edge to detect the tracheid, color, and geometric characteristics of the lumber during an automated grading process. The light line (70) employs thousands of fibers (46) of desired length (58) and thickness (52). The fibers (46) are randomized such that fibers (46) neighboring each other in the cable (48) do not necessarily neighbor each other in the light line subunit (42) so that the emitted light has substantially uniform intensity over its spatial range. Multiple light line subunits (42) are positioned adjacent to one another to achieve a desired light line length (60). A set of image sensors (22) in predetermined positions obtain three types of data from the light incident to the board (24). A computer analyzes the data to interpret the physical characteristics of the board (24) and determine how to grade or cut it.

